REMARKS

In the Official Action of August 13, 2004 claims 1-22 are rejected under 35 USC §102(e) as anticipated by US patent 6,316,996, Puotiniemi. The Examiner states that Puotiniemi discloses in Figure 4 a circuit arrangement that combines a Gilbert cell mixer, or modulator, that converts the input signal from terminals 1 and 2 into modulated output signals based upon the local oscillation input signal 1. Applicant's attorney respectfully disagrees with this assessment of Puotiniemi. In particular, the basic difference between Puotiniemi and the present invention is that Puotiniemi does not disclose a modulator but rather only discloses a mixer. At column 3, lines 12-16 it is specifically stated that the receiver 16 includes circuitry for implementing the well-known process of multiplying a bandpass signal by a periodic signal to obtain a new center frequency such as by mixing. Figure 4 is also directed to a mixer as discussed at column 3, lines 44-45. From column 3, lines 14-16 it is seen that the mixer is used to generate new frequencies by multiplying, which is well-known to those of ordinary skill in the art. In contrast, modulation is the addition of information to an electronic or optical signal carrier as is well-known to those of ordinary skill in the art.

Claim 1 of the present invention specifically recites a modulator having inputs for receipt of signal inputs and the means for converting the signal inputs into modulated output current signals based upon a local oscillator reference signal. Puotiniemi does not disclose such a modulator having input signals for receipt of signal inputs (IN+, IN-) and means for converting the signal into modulated output signals (OP1, OP2, R3, R4; Q1, Q2, Q3, Q4) based upon a local oscillator reference signal (LO+, LO-). Thus, it is respectfully submitted that the mixer disclosed in Figure 4 of Puotiniemi which uses a bandpass signal and a periodic signal to obtain a new center frequency, is not the same as nor does it suggest the modulator disclosed and claimed in claim 1.

In short, the double balanced mixer illustrated in Figure 4 of Puotiniemi is an improvement of the prior art double balanced mixer shown in Figure 3 of Puotiniemi wherein such double balanced mixers provide an adjustable AC load structure with the AC output impedance circuit having an adjustable AC gain output. Such a double balanced mixer is unlike the circuit arrangement of the present invention as claimed in claim 1 which combines a modulator and an automatic gain control amplifier. For all of the foregoing reasons, it is respectfully submitted that

claim 1 is neither anticipated nor suggested by Puotiniemi. Since claim 1 is believed to be distinguished over Puotiniemi, it is respectfully submitted that the claims dependent thereto; namely, claims 2-11, are further distinguishable over Puotiniemi and are therefore believed to be allowable in view of Puotiniemi.

Furthermore, independent claim 12 is directed to a transmitter for use in a mobile communications apparatus which includes a modulator and automatic gain control amplifier, wherein the modulator has a structure similar to the modulator recited in claim 1. Therefore, for reasons set forth with regard to claim 1, it is respectfully submitted that Puotiniemi does not disclose or suggest the transmitter recited in claim 12. Since claim 12 is believed to be distinguished over Puotiniemi, it is respectfully submitted that claims 13-22 are also distinguished over Puotiniemi since claims 13-22 all ultimately depend from independent claim 12.

The prior art made of record but not relied upon also does not disclose or suggest a circuit arrangement as defined in claim 1 nor a transmitter containing such a circuit arrangement as set forth in independent claim 12. More particularly, US patent 6,563,375, Khosrowbeygi et al., discloses an amplifier having stacked current-driven current drivers and in particular uses first and second current-steering sections arranged to steer a differential current input signal. This invention, like Puotiniemi, employs Gilbert cells (mixers) but does not disclose or suggest a modulator and associated automatic gain control amplifier as set forth in claim 1 of the present application.

US patent 6,057,714, Andrys, et al., discloses a double balanced differential active ring mixer with current shared active input balun. This reference does not disclose or suggest a circuit arrangement as set forth in claim 1 of the present application.

US patent 6,212,369, Avasarala discloses merged variable gain mixers which do not disclose or suggest the circuit arrangement of claim 1 of the present application. Similarly, US patent 6,370,372, Molnar, et al. discloses a sub-harmonic mixer circuit which has two switching stages to improve mixer gain. Such mixers do not disclose or suggest the circuit arrangement set forth in claim 1 of the present application.

Therefore, it is respectfully submitted that the present application is distinguished over the cited art and therefore reconsideration of the rejection of claims 1-22 is respectfully submitted.

Respectfully submitted,

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